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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/762,751	02/12/2001	Wolf-Dieter Rau	010443	7479

7590 03/25/2002

Law Offices of Karl Hormann
86 Sparks Street
Cambridge, MA 02138-2216

EXAMINER

KERVEROS, JAMES C

ART UNIT	PAPER NUMBER
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2858

DATE MAILED: 03/25/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/762,751

Applicant(s)

RAU, WOLF-DIETER

Examiner

James C Kerveros

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 March 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 4-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 4-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 4-6 are rejected under 35 U.S.C. 102(e) as being anticipated by Borden (US 5883518), ISSUED: March 16, 1999, FILED: April 24, 1996.

Regarding Claim 4, Borden discloses System and method for measuring the doping level and doping profile of a region in a semiconductor substrate, comprising:

Determining the lateral resolution, by measuring the phase of the analyzer beam 56 as shown in the doping level measuring system 50, which generates an electromagnetic radiation reference beam, 54 and an electromagnetic radiation analyzer beam 56, (FIGURE 2). These two beams are focused on the substrate 21 positioned so

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that the analyzer beam 56 passes through the doped region 22, such as the source region of an FET. A detector 58 detects this phase shift.

Regarding Claims 5 and 6, the method described in flowchart (FIGURE 7) of a procedure for measuring the doping level of region (22) in the semiconductor substrate (21), further comprising the steps of:

STEP 224 preparing a cross section sample of the semiconductor device. The substrate (21) is positioned and examined through the examining system.

STEP 226, it is determined whether or not the substrate has been properly aligned.

STEP 228 generating and modulating a planar electron wave. The analyzer beam and the reference beam are directed towards the substrate and either pass through the substrate or reflect off of the substrate, depending on the type of doping level measurement system, as shown in (FIGURES 2 and 3).

STEP 232, extracting the phase shift of the analyzer beam relative to the reference beam is determined.

STEP 234, determine the two dimensional distribution of the doping concentration from the phase. The doping level of the semiconductor substrate is determined from the phase shift of the analyzer beam relative to the reference beam.

Optically enlarging and superimposing the image wave. In FIGURE 3, after the analyzer and reference beams have passed through the substrate 21, they enter the combining system (80) that includes a lens (102) for focusing the beam onto a combiner

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(104). The combiner is Wollaston prism, which recombines the analyzer and reference beams into a single beam for deriving a hologram

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Borden (US 5883518) as applied to claims 1 and 5 by the pertinent art above.

Regarding Claims 7 and 8, Borden fails to disclose the limitations of a CCD camera and the doping distribution determination by numeric simulation process.

With respect to claims Claim 7, Borden discloses processor (117) part of the detector 58 for determining the doping level of the doped region of the substrate. The processor 117 has the capability of storing an image from a CCD digital camera. The apparatus further includes a video camera (90) for optional use in registering a hologram image. It would have been obvious at the time the invention was made to a person of ordinary skill in the art to use a CCD digital camera with the processor (117) in the Borden's device for the purpose of registering an electron hologram image.

With respect to Claim 8, Borden discloses a doping distribution as shown in FIGURE 8 chart diagram, which illustrates the relationship of numeric values between junction depth and doping level of the substrate. It would have been obvious to a person of ordinary skill in the art to use the chart diagram as taught by Borden for the purpose of the values in the cart using a numeric simulation process to determine the doping distribution.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Cole, Jr. (US 6078183), ISSUED: June 20, 2000, thermally induced voltage alteration for integrated circuit analysis.

Any inquiry concerning this communication from the examiner should be directed to JAMES C. KERVEROS at (703) 305-1081 or the examiner's supervisor, N. LE at (703) 308-0750.

The general fax phone number for the organization is (703) 308-7722. Any inquiry of a general nature relating to this application should be directed to the receptionist at (703) 305-4900.

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Patent Examiner,

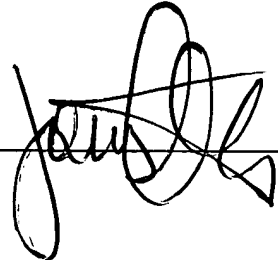
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Non-Final Rejection

Created by JKerveros

Date: March 20, 2002

 3/20/02